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BAKER & BOTTS
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
MUTSCHLER, BRIAN L	
ART UNIT	**PAPER NUMBER**
1753	

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/720,275	FUHR ET AL.	
	Examin r	Art Unit	
	Brian L. Mutschler	1753	

-- Th MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 20-38 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 20-38 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 February 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8 & 10 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Comments

1. As indicated below, the instant claims contain many inconsistent limitations. These limitations primarily relate to structural relationships, which are not clarified in the specification. In particular, the claimed relationships between the electrode positioned on the lateral side wall (recited in claim 20) and the other electrodes recited in the dependent claims are not readily discernable. Therefore, certain assumptions, as explained below, were required to examine the claims.

2. Additionally, the claims recite a certain amount of process limitations. For example, claim 20 recites a "field barrier with a predetermined curvature relative to the direction of flow" (see lines 8-9). The field barrier is determined by the current supplied to the electrodes, and the predetermined curvature is dependent on all of the operating parameters within the system. Another limitation that depends on the process is the "resulting force," which is recited in claims 22 and 24. As explained in the instant specification, the resulting force is a function of the flow rate of the fluid and the field generated by the electrodes. The limitations dependent on the operating parameters are deemed to be anticipated when the apparatus of the prior art is capable of operating or achieving in a similar manner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "**11**" has been used to designate a microelectrode (page 8,

first paragraph), a collector electrode (page 23, second paragraph), an axis (page 30, first paragraph) and a rotor (page 31, second paragraph). Reference characters "**211**" and "**212**" were used to show a first channel (fig. 4c) and a sub-channel (figs. 9 and 10). The following reference characters appearing in Figure 14 were previously used to describe other features: **11, 12, 13, 14, 15, 16** and **17**. The following reference characters appearing in Figure 15 were previously used to describe other features: **21, 22, 23** and **24**. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **21b** (page 8, first paragraph), **30** (page 8, second paragraph), **30a** and **30b** (page 16, second paragraph), **611d** (page 20, second paragraph), **86** (page 22, fourth paragraph; it appears that **16** should be changed to **86** in Figure 8), **811d** (page 23, second paragraph), **813d** (page 23, second paragraph), **91** (page 23, third paragraph), and **92** (page 23, third paragraph). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: **711a** (fig. 7b), **811** (fig. 8), and **31** (fig. 16). A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the

description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to because Figure 8 at "d)" contains several lead lines that are not identified with reference signs. In Figures 9 and 10, "Strömung" should be changed to either "current" or "flow" or simply deleted. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

7. The disclosure is objected to because of the following informalities:

a. On page 3 in the second paragraph, the reference to claim 1 should be deleted and the limitations of claim 1 should be inserted. The specification should not make reference to the claims.

b. On page 18 at the second paragraph, the reference sign "**17**" should be changed to "**47**".

c. On page 27 at the first paragraph, the reference sign "**121a**" should be changed to "**121**".

d. The specification is missing headings identifying the sections, e.g., "Brief Description of the Drawings."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 22-25 and 29-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 recites the limitation "the microelectrodes depending on the flow profile" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. The claims have not introduced microelectrodes depending on the flow profile, only at least two microelectrodes. Furthermore, there is no antecedent basis for "the flow profile." The same applies to dependent claim 23.

Claim 22 recites the limitation "the microelectrode" in lines 3 and 4. This limitation is indefinite because it is not clear which microelectrode is being addressed. The same applies to dependent claim 23.

Claim 24 recites the limitation "the microelectrode" in lines 3, 5 and 6. This limitation is indefinite because it is not clear which microelectrode is being addressed. The same applies to dependent claim 25.

Claim 25 is indefinite because it omits essential structural relationships of elements. Claim 25 recites the limitation "in which two microelectrodes are provided as sorting electrodes" in lines 1-2. What is the relationship between the two microelectrodes and the "at least one microelectrode" recited in claim 20? The claim language ("in which two microelectrodes are provided") implies that only two electrodes are present. Are the two microelectrodes different electrodes, or are there only two microelectrodes in the system (implying that at least one of the two microelectrodes of

claim 25 are positioned on a lateral wall)? The claim language appears to suggest that the two microelectrodes acting as sorting electrodes are different electrodes.

Claim 25 recites the limitation "their characteristics" in line 5. This limitation is indefinite because it is not clear which feature "their" modifies. Is "their" referring to the particles or the electrodes? What characteristics do the results depend on, e.g. polarizability, size, etc.?

Claim 29 recites the limitation "the microelectrodes are arranged in pairs on the bottom and cover surfaces of the channel" in lines 1-2. There is insufficient antecedent basis for "the microelectrodes" and "the bottom and cover surfaces" in the claim. The "at least one microelectrode" was originally described as "the microelectrode" in claim 20. Furthermore, the claim is indefinite because "the microelectrodes" of claim 29 have no apparent relationship to the "at least one microelectrode" of claim 20. The electrode of claim 20 was positioned on a lateral wall; the electrodes of claim 29 are arranged in pairs on the bottom and cover surfaces of the channel. What is the relationship between the various electrodes?

Claim 30 is indefinite because it omits essential relationships between structural elements. Claim 30 recites the limitation "in which two microelectrodes are provided on two opposite channel walls" in lines 1-2. What is the relationship between the two microelectrodes recited in claim 30 and the microelectrode recited in claim 20? The claim language ("in which two electrodes are provided") implies that only two electrodes are present. Are the two microelectrodes different electrodes, or are there only two

microelectrodes in the system (implying that the two microelectrodes of claim 29 are positioned on a lateral wall)? The same applies to dependent claims 31-33.

Claim 31 recites the limitation "the narrower lateral surfaces" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. What are narrower lateral surfaces? The same applies to dependent claims 32 and 33.

Claim 31 recites the limitations "area-shaped microelectrode" in line 3. What is the structure of an "area-shaped microelectrode"? What is the shape of an area? This limitation does not appear to have any structural properties. Any electrode will have an area, such as a cross-sectional area or a surface area. The same applies to dependent claims 32 and 33.

Claim 33 recites the limitation "in the region of the microelectrodes arranged on the opposite side" in line 3. This limitation is indefinite because claim 31 recites the limitation that one electrode is positioned on one lateral surface and another electrode is positioned on the opposite lateral surface, and claim 33 implies that the microelectrodes are arranged on one side, which is defined as "the opposite side". Furthermore, there is insufficient antecedent basis for "the opposite side". It is suggested that the phrase be changed to --in the region of the microelectrodes, which are arranged on opposite sides of the aperture--.

Claim 34 is indefinite because it omits essential relationships between structural elements. Claim 34 recites the limitation "in which three microelectrodes are provided of which two microelectrodes are arranged as focussing electrodes ... on the bottom and cover surfaces of the channel, and the third microelectrode is arranged as a field-

forming auxiliary spaced apart from the bottom and cover surfaces in the middle of the channel" in lines 1-6. This limitation is indefinite because it is not clear what the relationship is between the three microelectrodes recited in claim 34 and the at least on microelectrode recited in claim 20. The claim language ("in which three microelectrodes are provided") implies that there are only three microelectrodes. If there are only three electrodes, where is the electrode of claim 20 that is disposed on the lateral wall? The third electrode of claim 34 is positioned apart from the bottom and cover surfaces in the middle of the channel, which implies that the third electrode is not touching either lateral wall. Furthermore, there is insufficient antecedent basis for "the bottom and cover surfaces of the channel." The same applies to dependent claim 35.

Claims 36 and 37 are indefinite because they omit essential structural relationships between elements. Claims 36 and 37 recite limitations having (a) cuboid electrode(s) and a deflection electrode. What is the relationship between the microelectrode of claim 20 and the electrodes recited in claims 36 and 37.

Claim 38 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how the microsystem is used. There are no method steps recited in claim 38.

For the purpose of examination, it was assumed that in the limitation recited in claim 20 ("where at least one microelectrode is positioned on a lateral wall of the channel"), the lateral wall could include any wall. This assumption is made due to the indefiniteness in the claims. In many microfluidic devices the dimensions of the side,

top and bottom walls are approximately equal. Additionally, the actual definition of a top or side wall is often relative due to the positioning of the entire system.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 20, 21, 29 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Pohl (U.S. Pat. No. 4,326,934).

Regarding claim 20, Pohl discloses a dielectrophoretic system having an electrode (**30, 80, 90**) with a constant curvature that would generate a field barrier with a predetermined curvature relative to the direction of flow (figs. 1-4). The electrodes (**30, 80, 90**) are aligned on a lateral wall of a channel (**20, 86, 96**) (figs. 1-4).

Regarding claim 21, the electrode arrangement comprises at two electrodes (**30, 80, 90**) of the same shape and alignment and affixed on opposite walls of the channel (**20, 86, 96**) (figs. 1-4).

Regarding claim 29, the electrodes (**30, 80, 90**) are arranged in pairs on opposite sides of the channel (**20, 86, 96**) (figs. 1-4). There is no distinction between top/bottom sides and lateral sides in Pohl; each side is equivalent.

Regarding claim 38, the system of Pohl is used for sorting particles, cells, etc. (col. 1, lines 6-13).

Since Pohl teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

12. Claims 20, 30, 31, 33 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Crane (U.S. Pat. No. 5,489,506).

Regarding claim 20, Crane teaches a dielectrophoretic system comprising at least one electrode (**RF-1, RF-2, RF-3, 50**) on a lateral wall of a channel (fig. 3). The generated field barrier would have a predetermined curvature relative to the direction of flow.

Regarding claim 30, electrodes (**RF-1, RF-2, RF-3, 50**) on opposing walls have different shapes (fig. 3).

Regarding claim 31, the channel has a cross-sectional shape and the electrodes comprise are plate-shaped, which are area-shaped or band-shaped electrodes (fig. 3; col. 6, line 26-40).

Regarding claim 33, the channel is divided by a tube **18** and separation plate **30**, which is equivalent to the separation wall recited in the instant claims (fig. 3). The tube

18 and separation plate **30** divide the channel and prevent the movement of particles perpendicular to the channel.

Regarding claim 38, Crane teaches using the system for the separation of cells (col. 1, lines 10-16).

Since Crane teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

13. Claims 20-31 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Fiedler et al. ("Dielectrophoretic Sorting of Particles and Cells in a Microsystem," Anal. Chem., 70, pp. 1909-1915 (1998)).

Regarding claim 20, Fiedler et al. teach a dielectrophoretic system comprising an electrode array housed in a channel, wherein the electrodes are positioned on a wall of the channel (fig. 2; page 1911). The field barrier generated by the electrodes would have a predetermined curvature relative to the direction of flow.

Regarding claim 21, the system comprises at least two electrodes of the same shape and alignment affixed on opposite walls (fig. 2A). The aligner electrodes and electrodes comprising the switch are in the shape of curved bands (fig. 2A).

Regarding claim 22, the switch electrodes have a resulting force that would point upstream at every position of the field barrier (fig. 2A). (The terms upstream and downstream do not have any structural weight in the claim. Additionally, the resulting force is a process limitation that does not further limit the structure of the electrodes

insofar as the electrodes are configured such that they are capable of performing the specified function.)

Regarding claim 23, four electrodes are arranged to form a particle funnel (fig. 2A; p. 1912).

Regarding claim 24, the aligner electrodes are arranged such that the resulting force would act on a particle in one direction at one end of the electrode and the opposite direction at the other end of the electrode (fig. 2A).

Regarding claim 25, the switch electrodes are sorting electrodes that can sort particles based on their characteristics (fig. 2A; p. 1915).

Regarding claim 26, the switch electrodes comprise two V-shaped electrodes, which are closed in the downstream direction (fig. 2A).

Regarding claim 27, the system comprises electrodes acting in combination as collector electrodes (fig. 5).

Regarding claim 28, the collector electrodes are arranged in cross direction of the channel (fig. 5).

Regarding claim 29, the electrodes are arranged in pairs on the top and bottom surfaces of the channel (fig. 5A, page 1911).

Regarding claim 30, the system includes electrodes on opposite channel walls having different geometric shapes (fig. 2A).

Regarding claim 31, the system has a rectangular cross-sectional shape and the electrodes are band-shaped and disposed on opposite surfaces (fig. 2A; p. 1911). (All

band-shaped electrodes are also area-shaped; it is impossible for an electrode not to have an area.)

Regarding claim 38, the system of Fiedler et al. is used to separate particles (p. 1909).

Since Fiedler et al. teach all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

14. Claims 20, 29, 34 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Becker et al. (U.S. Pat. No. 5,888,370).

Regarding claim 20, Becker et al. teach a dielectrophoretic system comprising an electrode array **5** placed on the top, bottom and side walls of a channel **10** that can be adapted at any angle with respect to the fluid flow through the chamber **10** (col. 16, lines 16-61). The field barrier would have a predetermined curvature relative to the direction of flow.

Regarding claim 29, as shown in Figure 2B, the electrodes are arranged in pairs on opposite sides of the channel (fig. 2B).

Regarding claim 34, the system comprises an electrode array placed on the top and bottom walls as well as on the side walls (col. 16, lines 16-61). Each electrode forms a field. The electrodes also focus the particles suspended in the fluid (col. 17, lines 14-17).

Regarding claim 38, the system of Crane is used to separate or collect particles (col. 17, lines 9-51).

Since Becker et al. teach all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

15. Claims 20 and 36-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Pethig et al. (U.S. Pat. No. 5,814,200).

Regarding claim 20, Pethig et al. disclose a dielectrophoretic system comprising at least one electrode (**41, 42, 43**) formed on a wall of a channel (figs. 11 and 13a). The electrodes would create a field barrier having a predetermined curvature with respect to the flow of fluid.

Regarding claims 36 and 37, the electrodes of Pethig et al. comprise a plurality of cuboid electrodes, which collect particles in the reservoir spaces between adjacent projections (figs. 13a-d, 14a, 14b, 19 and 20). As seen in the figures, the opposite electrode acts as a deflecting electrode (col. 15, line 20 to col. 16, line 19).

Regarding claim 38, the system is used to separate particles (col. 1, lines 60-62).

Since Pethig et al. teach all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crane (U.S. Pat. No. 5,489,506).

Crane discloses a system having the limitations recited in claims 20, 30, 31, 33 and 38 of the instant invention, as explained above in section 12.

The system of Crane differs from the instant invention because Crane does not teach arranging the area-shaped electrode to be floating, as recited in claim 32.

Whether an electrode is floating, grounded, or polarized with a potential is determined by the desired operating conditions of the system. Crane teaches that the electrode **50** is grounded. When grounded, the driving force across the channel is the potential between the grounded electrode and the other electrodes. The same is true if the electrode was floated or polarized. By grounding, floating or polarizing the electrode, the driving force across the channel can be set to the desired operating conditions. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrode of Crane to arrange it so as to be floating because setting the potential of the electrode allows the driving force across the channel to be controlled to achieve the optimum conditions.

18. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becker et al. (U.S. Pat. No. 5,888,370) in view of Crane (U.S. Pat. No. 5,489,506).

Becker et al. discloses a system having the limitations recited in claims 20, 29, 34 and 38, as explained above in section 14.

Becker et al. further disclose that "there may be more than one outlet port from which to collect the particulate matter which exits the chamber **10**" (col. 17, lines 30-32).

The system of Becker et al. differs from the instant invention because Becker et al. do not disclose that the channel is divided into two sub-channels by a separation wall with an aperture upstream in location to the auxiliary electrode.

Crane teaches a dielectrophoretic system wherein the channel is divided by a tube **18** and separation plate **30**, which is equivalent to the separation wall recited in the instant claims (fig. 3). The tube **18** and separation plate **30** divide the channel and prevent the movement of particles perpendicular to the channel. The collection system allows only the desired particles to be collected (col. 3, lines 21-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the system of Becker et al. to use a separating means as taught by Crane because the separating means allows the particles to be selectively separated and collected.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references relate to dielectrophoretic systems having similar electrodes.

U.S. Pat. No. 5,858,192	Becker et al.
US 2002/0175079 A1	Christel et al.

Wang et al., "Dielectrophoretic Manipulation of Particles," Conference Record of the 1995 IEEE 30th IAS Annual Meeting, Vol. 2, pp. 1358-1365 (1995).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (703) 305-0180. The examiner can normally be reached on Monday-Friday from 7:30am to 4:00pm. By the end of December 2003, the telephone number above will be changed to (571) 272-1341.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

blm
November 21, 2003